RED CABIN CREEK CED RETROFIT

FEBRUARY 4, 2005

INTRODUCTION

The Red Cabin Creek retrofit site is located on and adjacent to mile post (MP) 76.25 along State Route (SR) 20. This site is approximately 12 miles east of Sedro-Wooley, Skagit County. SR 20 is a main transit route for local, commercial, and tourist traffic.

THE CED PROBLEM

The crossing of Red Cabin Creek at SR 20 consists of a twin concrete box culvert. Sediment deposition has been a recurring problem at this culvert since at least the mid-1970's. The chronic sediment deposition extends approximately 300 feet upstream to nearly 800 feet downstream of the culvert. The deposit of this material results from a combination of the alluvial fan that is present in the headwaters of the creek, the low gradient that is present in this area, and backwater from Jim's Slough and the Skagit River. Dredging of the culvert is usually required on an annual basis to maintain conveyance capacity.

There have been multiple instances of inundation of SR 20 (some involving road closure). This can be attributed, at least in part, to blockage of the culvert by sediment. Also, bank erosion adjacent to the SR 20 roadfill downstream of the culvert may eventually cause the paved portion of the roadway to fail.

Dredging of the culvert and portions of the channel upstream and downstream as well as premature dewatering of the aggraded channel and isolation of pool habitat, has often resulted in the mortality of adult and juvenile salmon. The Washington State Department of Fish and Wildlife (WDFW) is concerned that the effects from routine maintenance dredging of this stream is one factor contributing to unacceptable adverse impact to fish life. The CED program is the appropriate mechanism to fund a permanent fix to both the on-going culvert maintenance problem for Transportation and to upgrade the system to ensure protection of fish life under the Hydraulic Code.

FISH UTILIZATION & HABITAT AVAILABILITY

The Red Cabin Creek system supports bull trout, Chinook, chum, coho, pink, summer steelhead, and winter steelhead. These species are either present or presumed to be present. Bull trout are currently listed as threatened under the federal Endangered Species Act.

Red Cabin Creek consists of a small meandering creek made up of pools and riffles. On the north side of SR 20, some diking and channelization has occurred. Undercut banks and woody debris are present in areas throughout the lower and upper sections of SR 20. The large woody debris is limited in both size and quantity, but where present, tends to create the deepest pools.

The riparian vegetation is mainly deciduous shrubs and trees with a few interspersed *Thuja plicata* (western red cedar). Overhanging vegetation is most prevalent downstream of the site, and in some locations the canopy is almost closed over narrow portions of the creek. At SR 20, the canopy is mainly open.

Substrate composition ranges from sand to small cobble, with coarser material associated with bars and finer material found in pools or along channel margins. Significant backwater deposits

(silt and fine sand) from the Skagit are present on the floodplain adjacent to the creek. Upstream of SR 20, coarser gravel (suitable for spawning) is present and the amount of sediment appears to decline. The creek below the culvert at SR 20 goes dry sometime in spring (in 2004 it was sometime between April 27th and May 10th) and then becomes watered again with the onset of fall rains.

Figure 1. Red Cabin Creek CED site.

ONGOING WORK

A Site and Reach Assessment has been conducted by WSDOT hydrology staff and the Integrated Streambank Protection Guidelines (http://wdfw.wa.gov/hab/ahg/ispgdoc.htm) were used to address the overall project objectives. It is anticipated that the outcome of the project will result in meeting the necessary requirements to protect SR 20 and provide environmental enhancements to this reach of the river. WSDOT is currently seeking new funding from the Legislature to conduct this work during the 2005-2007 biennium.